DISCUSSION ON DISSOCIATED SENSATIONS AS A MEANS OF DIAGNOSIS.

Dr. C. A. HERTER said that he believed dissociation of sensation was met with, especially the loss of pain and the temperature sense, with only a partial loss of the tactile sense, in cases of peripheral neuritis. He had seen cases of alcoholic neuritis in which in certain areas of lost sensibility this condition was present, and this was particularly true late in the disease when the period of hyperæsthesia had passed. But he had not met with any cases of absolute loss of pain and temperature sense with preservation of the tactile sense except those which might be reasonably supposed to be instances in which the lesion could be located in the spinal cord. He called attention especially to cases of hemorrhage into the spinal cord, and especially into the central canal. About a year ago he had had a patient in the City Hospital who had fallen into a hatchway and struck on the right shoulder. This man said that immediately after this accident, he had been partially paralyzed in all four extremities. When seen by the speaker, about two months later, there was an atypical Brown-Séquard paralysis. His right leg was completely paralyzed; the left leg exhibited loss of sensation to pain and temperature with perfect preservation of tactile sense. The internes of the hospital had made a diagnosis of syringomyelia, as had been expected. After two or three months, there had been a gradual return of pain and temperature sense. This case was undoubtedly one of hemorrhage into the gray substance of the cord. He had noted in the recent literature the report of half a dozen cases of a similar character. From this it appeared to be an established fact that hemorrhage into the central canal and gray matter of the spinal cord was very apt to give rise to this symptom. These were the only conditions under which he had met with this particular dissociation of sensations.

Dr. SACHS said that it had probably been the common experience with most neurologists that whenever the pain and temperature sense were diminished, or lost, and the tactile sense remained, the case was looked upon as a gliosis or a syringomyelia, particularly if associated with atrophic palsies in the parts in which the sensory disturbances were manifest,and the reflexes altered in the lower extremities, showing on the whole a process most marked in the cervical portion of the cord. His experience had led him to doubt the pathognomonic value of this special symptom. Many years ago, Weir Mitchell had described this dissociation of sensation in injuries of the peripheral nerves without attaching much importance to the symptom. The cases in which the speaker had observed it were several of syringomyelia, and in a case of Pott's paralysis. It was the occurrence in this last disease that had led him to give this subject considerable thought. This patient, an adult, was still under treatment for the disease, which had been progressive. When first seen by the speaker, the man had been supposed to be suffering from vague rheumatic pains, but an incipient kyphosis had been found, and other symptoms indicating Pott's disease and Pott's paralysis. On making the sensory examination, he had been greatly surprised to find a very distinct dissociation of sensation in exactly the order observed in cases of syringomyelia. He had therefore been inclined to think at first that there must be some central changes in the cord in this case, but further progress of the case had shown it to be simply one of Pott's paralysis and nothing else. At the present time, this man had spastic rigidity of the lower extremities without any involvement of the bladder, or other symptoms pointing to marked myelitic changes. Moreover, there was now complete loss of every form of sensation. He was inclined to regard the condition therefore as having been due to the first impact of the vertebral trouble—that in this case it was practically a root trouble. We were likely to get this dissociation in all those diseases beginning, not in, but around the spinal cord, choking up some of the root fibres.

Six years ago he had seen a case presenting distinct atrophic paralysis in both upper extremities with slight increase in the reflex in one lower extremity, and with a distinct dissociation of sensations, as seen in syringomyelia. The man gave a specific history. The progress of this case had shown that in all probability it was one of localized specific meningitis around the cervical portion of the cord. The disease had become absolutely stationary; he had developed absolutely no other symptoms;

and now there was loss of tactile sense and absolute loss of the muscular sense, with preservation of the pain sense. The temperature sense was diminished. Such a case showed that we must not attach too much importance to that special form of dissociation of sensations which had been associated with syringomyelia. He had still another case under observation—one of gliosis, in which there was some dissociation of sensation but not exactly of the kind ordinarily described as present in such cases. This symptom of dissociation, he thought, would occur where the central gray matter was affected, whether from hæmorrhage or central gliosis, but much importance should be attached to the fact that it might be a symptom of early root disease.

Dr. N. E. BRILL said that about ten years ago he had reported a case which would corroborate the position taken by Dr. Sachs. It was one of fracture of the lamina of the fifth cervical vertebra. The patient was then thirty years of age, and the fracture had occurred when he was about ten years of age. When seen by the speaker he had presented marked signs of compression of the cord with some anomalous muscular dystrophies. Dr. Sayre had examined the case and found undoubted callus, and on pressure posteriorly, over the injured region, there had been a sensation of cold which the patient had himself noticed previously.

Dr. HERTER said that while he would agree with Dr. Sachs that damage to the posterior nerve roots might be a cause of dissociation of sensations, his experience had been that it was ordinarily not so. In most cases in which the vertebræ were so fractured as to give rise to compression of the nerve roots, and in most cases of tumor in which the posterior nerve roots were implicated, all forms of sensibility were abolished at the same time. He had seen several cases of fracture of the vertebræ with pinching of the nerve roots. In some of these the autopsies had shown that only the nerve roots had been damaged. In these cases all three forms of sensibility had been lost.

Dr. SACHS said that he did not wish to be understood as considering disease of the nerve roots a frequent cause; he only wished to point out the possibility of such a cause.

Dr. IRA VAN GIESON said that there was much reason to believe that the long fibres in the posterior columns conveyed pressure or tactile sensations. There was probably a small complement of fibres which also conveyed muscular sense impulses. It seemed to him to be pretty definitely shown that the column of Gowers' conveyed pain sensations. There were some cases which seemed to show that temperature sensation and pain sensation travelled together. The tract of Flechsig seemed to be concerned with a conveyance of muscular impulses. In syringomyelia, the pain tract was liable to be interrupted, but whether this column of Gowers' was interrupted, or the interruptions occurred in the cord, there was invariably an analgesia of the opposite side. When these tracts in the medulla were separated so that tumors might destoy one or the other of them, it was found that Gowers' tract in certain cases conveyed temperature and pain sensation, Flechsig's column, muscular sense impressions, and the posterior columns tactile sensation and muscular sense. Regarding the association of muscular and painful sensations, clinical evidence was conflicting. In some cases there might be a distinct loss of pain sensation, but not of temperature sensation. One might conclude, therefore, that in certain individuals the temperature sense fibres passed along with the pain fibres, and that in other cases they pursued another course. He thought that certain reported cases of syringomyelia of traumatic origin had been nothing more or less than hæmorrhages into the spinal cord. Hæmorrhage into the spinal cord was liable to assume a columnar distribution in the lymphatics, or perivascular spaces which pass in from the anterior spinal artery. In his opinion, a lesion of the posterior roots would result, not in dissociation of sensory impressions, but in destruction of several of them at the same time.

The recovery of lost functions, as shown in Dr. Sachs' case was an exceedingly interesting topic. The only explanation seemed to be the cutting off of the conducting path at some particular level, and the seeking out of new channels of conduction in the spinal cord.

Dr. A. WIENER said that he had also observed Dr. Sachs' case of Pott's disease, and had since then examined other cases regarding the dissociation of sensations. He had been surprised to see how often this occurred. He had, however, never yet found in any particular case such a complete absence of pain and temperature sense as in syringomyelia. If the temperature and pain senses were simply diminished, the lesion might be at the roots, or in the cord, but where they were completely absent, we could be pretty sure about placing the lesion within the gray matter of the spinal cord.

Dr. SACHS said that Dr. Van Gieson expected all forms of sensation to be abolished when there was a lesion affecting the posterior roots. In reply, he would say that a case had been reported some years ago by Thomsen, in which there was clinically a distinct nuclear palsy, yet at autopsy there was found to be an infiltration of the third nerve root fibres, and this infiltration had evidently choked up some of the fibres, but not all of them. In the case of specific disease, it had been shown that a lesion might affect part of the root without involving all the fibres; hence, he felt that dissociation might after all be due to partial affection of the posterior root fibres.

Dr. HERTER said that we must distinguish quite sharply between the cases in which pain and temperature sense were absolutely lost, and the tactile sense perfectly preserved, and those cases in which the tactile sense was nearly perfect, and also between cases in which tactile sense was perfect, but there was a partial loss only of the pain and temperature sense.

Dr. VAN GIESON said that the example quoted by Dr. Sachs was hardly a parallel, for in that case the oculomotor roots were involved. The fibres of the posterior roots all had different functions, while the oculo-motor root was strictly motor. He was willing to admit that there might be chronic processes which would only involve certain fibres of a root.

Dr. CHARLES L. DANA said that (1) differentiations of cutaneous sensations did not occur in peripheral neuritis except to a very minor extent. The only exception which he recalled was the doubtful one of Morvan's disease, and perhaps of leprous neuritis. (2) Differentiations of cutaneous sensations occurred in spinal cord diseases, but only completely in those diseases involving the central part of the cord (traumatic hæmato-myelia, syringo-myelia). In columnar and spinal root disease, like tabes, the differentiations occured, but were never complete—*e. g.* complete separation of touch from pain or temperature anæsthesia—at least this had been his personal experience. (3) Differentiations of cutaneous sensations occurred most strikingly and completely in ponto-bulbar lesions, and were of diagnostic value here, taken with other symptoms. (4) Differentiations of cutaneous sensations did not occur in any sharp extent in organic cortical lesions. The cutaneous "locality sense" was the one most singled out. (5) Differentiation of cutaneous sensations did not occur completely in hysterical anæsthesia, though the pain sense was most involved. There were some exceptional cases in which the pain sense was distinctly singled out. The differentiation of cutaneous sensations, therefore, was least in peripheral nerve lesions, increased in spinal root lesions, and again in central spinal cord lesions It was most striking and complete in ponto bulbar lesions, and became very slight again in cortical lesions. Through the whole series the pain sense was the one most often differentiated, except in the cortex cerebri.

THE PRESIDENT said that in cases of transverse myelitis, although there was a loss of sensation, the pressure sense might remain. It was possible to imagine a lesion from hæmorrhage into the cord, which would follow out exactly the lines of syringomyelia. It must be, however, a very rare condition.